(19) World Intellectual Property Organization International Bureau





(43) International Publication Date 18 April 2002 (18.04.2002)

PCT

(10) International Publication Number WO 02/031613 A3

(51) International Patent Classification7: 17/10, 17/50, G06G 7/48

G06F 7/60,

(21) International Application Number: PCT/IL01/00937

(22) International Filing Date: 10 October 2001 (10.10.2001)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data: 09/689.884

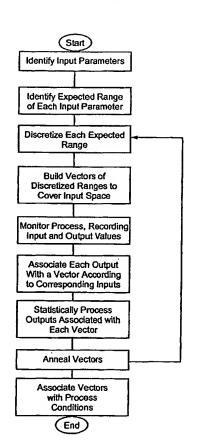
13 October 2000 (13.10.2000) US

- (71) Applicant (for all designated States except US): INSYST LTD. [II./IL]; Har Hotzvim, 7 HaMarpe Street, 91231 Jerusalem (IL).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): GOLDMAN, Arnold, J. [IL/IL]; 18 HaPalmach Street, 92542 Jerusalem

- (IL). HARTMAN, Jehuda [IL/IL]; 18 HaTzanchanim Street, 76212 Rehovot (IL). FISHER, Joseph [IL/IL]; 3 Mishol HeHadas Street, 97277 Jerusalem (IL). SAREL, Shlomo [IL/IL]; 151 Ma'ale MichMash, 90634 M.P. Yosh (IL).
- (74) Agent: G. E. EHRLICH (1995) LTD.; 28 Bezalel Street, 52521 Ramat Gan (IL).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian

[Continued on next page]

(54) Title: SYSTEM AND METHOD FOR MONITORING PROCESS QUALITY CONTROL



(57) Abstract: A system and method for monitoring process quality control. A series of input parameters are identified as being significant in effecting the output of a process. Each input parameter has an expected range. Each expected range is discretized into a series of sub-ranges and a vector is built for each possible combination of sub-ranges. The process is then monitored to obtain a statistically significant set of samples, each sample comprising a process output and corresponding inputs (Fig. 2). A knowledge base and model are built (Fig. 5).

O 02/031613 A3



patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report

(88) Date of publication of the international search report: 17 October 2002

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/IL01/00937

A. CLASSIFICATION OF SUBJECT MATTER IPC(7) : G06F 7/60, 17/10, 17/50; G06G 7/48 US CL : 703/2, 6, 13 According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols) U.S.: 703/2, 6, 13		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) Please See Continuation Sheet		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category * Citation of document, with indication, where appr		
X US 5,866,437 A (CHEN et al.) 02 February 1999 (02.0 Background of the Invention, Summary of the Invention	n, col 2, lines 64 et seq.	
	US 6,125,235 A (PADILLA et al.) 26 September 2000 (26.09.2000), Abstract, Figures 1-6, Background of the Invention, Summary of the Invention, col 5, lines 56 et seq.	
	Background of the Invention, Summary of the Invention, col 3, lines 4 et seq.	
	US 5,546,312 A (MOZUMDER et al.) 13 August, 1996 (13.08.1996), Abstract, Figures 1- 5, Background of the Invention, Summary of the Invention, col 4, lines 8 et seq.	
X US 5,966,527 A (KRIVOKAPIC et al.) 12 October, 19	US 5,966,527 A (KRIVOKAPIC et al.) 12 October, 1999 (12.10.1999), Abstract, Figures 1-7c, Background of the Invention, Summary of the Invention, col.5, lines 58 et seq.	
X US 5,646,870 A (KRIVOKAPIC et al.) 08 July, 1997	US 5,646,870 A (KRIVOKAPIC et al.) 08 July, 1997 (08.07.1997), Abstract, Figures 1-9B, Background of the Invention, Summary of the Invention, col.7, lines 10 et seq.	
X US 5,956,251 A (ATKINSON et al.) 21 September 199	US 5,956,251 A (ATKINSON et al.) 21 September 1999 (21.09.1999), Abstract, Figures 1-1-26 17, Background of the Invention, Summary of the Invention, col.7, lines 33 et seq.	
X US 5,781,430 A (TSAI et al.) 14 July 1998 (14.07.199 Background of the Invention, Summary of the Invention	98), Abstract, Figures 1-17,	
Buongstourns of the Invention, building of the Invention, con. 5, lines 45 et seq.		
·		
Further documents are listed in the continuation of Box C.	See patent family annex. T" later document published after the international filling date or priority.	
Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance	'T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention	
	X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step	
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	when the document is taken alone 'Y" document of particular relevance; the claimed invention cannot be considered to involve an invention step when the document is considered with the according to the constitution.	
"O" document referring to an oral disclosure, use, exhibition or other means	combined with one or more other such documents, such combination being obvious to a person skilled in the art	
"P" document published prior to the international filing date but later than the priority date claimed	*&" document member of the same patent family	
Date of the actual completion of the international search	Date of mailing of the international search report	
13 June 2002 (13.06.2002)	Authorized officer	
Commissioner of Patents and Trademarks Box PCT	William D. Thomson James R. Matthiais	
Washington, D.C. 20231	Telephone No. 703-305-3257	

INTERNATIONAL SEARCH REPORT PCT/IL01/00937 Continuation of B. FIELDS SEARCHED Item 3: search terms: model\$, statistic\$, vector, manufact\$, knowledge adj base, anneal, process, discret\$, range

The second of th

Form PCT/ISA/210 (second sheet) (July 1998)

International application No.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/IL01/00937

The technical features mentioned in the abstract do not include a reference sign between parentheses (PCT Rule 8.1(d)).

NEW ABSTRACT

A system and method for monitoring process quality control. A series of input parameters are identified as being significant in effecting the output of a process. Each input parameter has an expected range. Each expected range is discretized into a series of subranges and a vector is built for each possible combination of sub-ranges. The process is then monitored to obtain a statistically significant set of samples, each sample comprising a process output and corresponding inputs (Fig. 2). A knowledge base and model are built (Fig. 5).